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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,594	08/25/2003	S. Brandon Keller	100111230-1	2408

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HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER

LEVIN, NAUM B

ART UNIT PAPER NUMBER

2825

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/647,594

Applicant(s)

KELLER ET AL.

Examiner

Naum B. Levin

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/20/05</u>   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

This office action is in response to application 10/647,594, Amendment and Remarks filed on 06/20/2005. Claims 1-20 remain pending in the application.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being unpatentable by Khouja et al. (US Patent 5,668,732).

2. As to claims 1, 6, 11 and 15 Khouja discloses:

(1) A method for determining activity factors of a circuit design, comprising:

assigning (specifying/establish) an activity factor (toggle rate, probability) to one or more node types (inputs/outputs, endpoints types: synchronous/asynchronous) (col.26, ll.41-46; col.34, ll.35-41; col.36, ll.4-22; col.47, ll.33-50);

reading (extracting) one or more signal nets from a netlist of the circuit design (col.2, ll.39-40; col.13, ll.22-28; col.59, ll.1-67; col.60, ll.1-67; col.116, ll.45-48);

processing the signal nets to associate one of the node types with each of the signal nets (col.36, ll.25-45); and

determining (calculating) an activity factor for each of the signal nets based upon node type (col.34, ll.42-67; col.35, ll.1-7);

(6) A system for determining activity factors of a circuit design, comprising:  
a circuit recognition tool responsive to control by an E-CAD (CAD) tool to determine node types of one or more signal nets of the circuit design (col.9, ll.57-67; col.10, ll.1-17; col.36, ll.25-45);

memory for storing activity factors associated with the node types, the activity factor being determined by node type (col.9, ll.24-56; col.26, ll.41-46; col.34, ll.35-41; col.36, ll.4-22; col.47, ll.33-50); and

an analysis tool being operable to access the memory to determine an activity factor for each of the signal nets based upon node type (col.9, ll.57-67; col.34, ll.42-67; col.35, ll.1-7);

(11) A system for determining activity factors of a circuit design, comprising:  
means for reading one or more signal nets from a netlist of the circuit design (col.2, ll.39-40; col.9, ll.24-56; col.13, ll.22-28; col.59, ll.1-67; col.60, ll.1-67; col.116, ll.45-48);

means for processing the signal nets to determine a node type for each of the signal nets (col.9, ll.24-56; col.36, ll.25-45); and

means for determining an activity factor for each of the signal nets based upon node type (col.9, ll.24-56; col.34, ll.42-67; col.35, ll.1-7);

A software product comprising instructions, stored on computer-readable media, wherein the instructions, when executed by a computer, perform steps for determining activity factors of a circuit design, comprising (col.9, ll.24-56; col.26, ll.41-46; col.34, ll.35-41; col.36, ll.4-22; col.47, ll.33-50):

reading one or more signal nets from a netlist of the circuit design (col.2, ll.39-40; col.13, ll.22-28; col.59, ll.1-67; col.60, ll.1-67; col.116, ll.45-48);

processing the signal nets to associate a node type with each of the signal nets (col.36, ll.25-45); and

determining an activity factor for each of the signal nets based upon the node type (col.34, ll.42-67; col.35, ll.1-7).

3. As to claims 2-5, 7-10, 12-14 and 16-20 Khouja recites:

(2), (12), (16) The method/system/software, wherein the step of processing comprising determining a node type selected from the group of static, dynamic, clock and non-toggling (col.36, ll.4-45);

(3), (8), (18) The method/system/software, wherein the step of assigning comprising storing the activity factor within a lookup table (col.8, ll.20-21; col.11, ll.1-34);

(4), (5), (19) The method/software, wherein the step of determining switching power requirements comprising using the activity factor assigned to the node type of each of the signal nets (col.11, ll.1-34; col.12, ll.34-63; col.51, ll.19-67; col.52, ll.1-67; col.53, ll.1-30);

(7) The system of claim 6, the analysis tool being responsive to control by the E-CAD tool to analyze the circuit design using the activity factors (col.9, ll.57-67; col.34, ll.42-67; col.35, ll.1-7);

(9), (14), (20) The system/software, further comprising means for accepting user inputs to specify the activity factors stored in the memory (col.9, ll.24-56);

(13), (17) The system/software, further comprising means for assigning an activity factor for each the node types (col.26, ll.41-46; col.34, ll.35-41; col.36, ll.4-22; col.47, ll.33-50).

**REMARKS**

4. Examiner appreciates the detailed remarks offered by Applicants, however, independent claims not recite these specific particular limitations.

5. Applicants argues that Khouja does not teach every element of independent claims.

6. With respect to the limitation of the claim 1 “assigning activity factor to one or more node types” Khouja discloses in one of a few aspects a method of estimating the **toggle rates** in a circuit (col. 7, ll.35-36), wherein the **toggle rate of the net** or **activity factor** represent the number of transitions per second in the corresponding net (col. 6, ll.12-15) and as shown in the step 4000 (assigning **activity factor for a net**) of the Fig. 4.

7. With respect to the limitation of the claim 1 “processing the signal nets to associate one of the noted types with each of the signal nets” Khouja teaches processing the signal nets depending on the mode of an endpoint net (**node types**), wherein endpoint might be marked as “sp-only” or “sp-and-tr” (**different types of node**)(col. 36, ll.25-30) and determination of the mode of every endpoint net (**node types**) was performed during modal processing (col. 36, ll.4-11).

8. With respect to the limitation of the claim 1 “determining an activity factor for each of the signal nets based upon node type” Khouja recites computing the toggle rate

(**activity factor**) depending on the **node type** (**mode of the endpoint net**) (col. 36, ll.13-18). **Every net** can be in one of two modes (**node types**) (col.35, ll.57-65).

9. Independent claims 6, 11 and 15 are analogous to claim 1 and have similar passages in Khouja.

10. With respect to limitation of the claims 2, 12 and 16 “a node type selected from the group of static, dynamic, clock and non-toggling Khouja teaches distinguishing the **nodes by types** (mode of an endpoint net) corresponding to the types of the elements in the net such as nodes of sequential element (**clock**)(col. 36, ll.8-10), combinational element (**static**) for which the toggle rate (**activity factor**) does not have to be computed (**non-toggling**) (col. 36, ll.20-33).

11. With respect to the limitation of the claims 3, 8 and 18 “storing the activity factor with a lookup table” Khouja et al. teaches storing the data (result of computation) in the two dimensional **lookup table** shown on the Fig. 9 (col. 8, ll.19-20) comprising the weighted transition time including toggle rate (**activity factor**) (col. 11, ll.15-17).

12. Further as indicated the references do read upon the claim language, thereby, examiner defined Applicants’ arguments as none persuasive.

Accordingly, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Naum B. Levin whose telephone number is 571-272-1898. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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*Thuan Do*  
THUAN DO  
Primary examiner  
8/27/2005